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## Description

Method for administering supplementary services in telecommunication systems

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The invention relates to intelligent networks in the field of telecommunications, particularly of mobile radio, which provide the user with various services. Such services include, for example, a prepaid service (PPS), virtual private networks (VPN) or a personal number service (PNS) by means of which a subscriber can always be reached under the same subscriber number at various stations or within various communication networks.

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In addition to these primary services, the offer of performances or services (supplementary services), which are available and can be selected/deselected on a user-related basis, is increasing. Such supplementary facilities are known, for example, by the terms "blacklist" (list of subscribers whose call is, for example, unwanted and should be filtered out), "white list" (subscribers whose calls are wanted), "friends and family" (preferred subscribers, for example in connection with price discounts) or "hunting list" (sequential forwarding between a number of subscribers until one of the subscribers can be reached).

A user- or subscriber-related adjustment (administration) of the supplementary services (for example adding or deleting a subscriber identification number in one or from one of the services described above) via DTMF menus, known per se, is comparatively expensive because the subscriber demands various optional choices

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in voice-based dialogues and subsequent manual inputs. If, for example, the subscriber wishes to input a further call number into his "blacklist" from his subscriber station (for example a mobile telephone), he  
5 would first have to dial a certain service number. It is only this which allows him to input the respective call number manually - possibly after previous identification and authentication. This input is done as a long column of numbers/data which is repeated  
10 (announced) for confirmation. This procedure holds a large number of error sources and is comparatively time-consuming.

15 The object of the present invention consists in creating a method by means of which supplementary facilities in intelligent networks can be adjusted, turned off or modified (administration) by simple means in a subscriber-related manner.

20 According to the invention, this object is achieved by a method for administering supplementary services in telecommunication systems, in which a call from a calling subscriber station is routed to an intelligent node which runs supplementary services activated by the  
25 subscriber and possibly switches the call through to the called subscriber station and an operating menu which is transmitted to the called subscriber station and which provides for the administration of the supplementary services with respect to the calling  
30 subscriber station is generated on the basis of the available supplementary services.

In the method according to the invention, the  
35 respective associated intelligent node is addressed (triggered) in the case of an incoming call. This can be implemented by the intelligent node associated with the (called) subscriber identification

being subsequently addressed when a call arrives at the destination exchange. Whether the node, also designated as "Service Control Point" (SCP), is responsible depends on various criteria and depends, for example,

5 on the current location of the called subscriber station which is in each case determined during the routing through the network. The node, in turn, is addressed by a mobile switching center (MSC) allocated to the location of the called subscriber station, e.g.

10 when the connection is set up by using a landline network.

In the intelligent node or in another suitable acceptance point (for example in the so-called service management point (SMP) which contains periodically updated mirrored data from the node SPC), the supplementary services currently available for the individual subscriber station and activated by the subscriber are called up and run. For example this run

20 can have the result that the subscriber identification number of the calling subscriber station is contained in the "white list" and is thus switched through to the called subscriber station.

25 An essential aspect of the invention consists in that an operating menu which is transmitted to the called subscriber station is generated via the supplementary services on the basis of the data available, for example, from the intelligent node. The called

30 subscriber can particularly advantageously administer the supplementary services with respect to the calling subscriber station or, respectively, to its subscriber identification number, via this (visual) operating menu. For example, the calling subscriber station can

35 be received in a simple manner into the

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supplementary service "family and friends" by the (preferably indicated) subscriber identification number of the calling subscriber station being transferred, for example, by corresponding marking or clicking on  
5 the desired supplementary service in the menu ("family and friends"). In the same manner, a supplementary service can also be administered in order to, for example, remove a subscriber identification number from a supplementary service or to change it.

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An essential aspect of the method according to the invention is thus that the supplementary services available for the called subscriber station are assembled and transmitted, together with a selection  
15 option of the called subscriber station, in dependence on the subscriber identification number of the calling subscriber station with respect to this calling number by a higher-level logic. As a result, the supplementary services can be administered advantageously before,  
20 after or during the conversation with the respective calling subscriber station without the subscriber being forced to carry out elaborate administration procedures. In particular, the elaborate calling of a corresponding service number followed by manual and/or  
25 voice-guided input of the administration requests is eliminated.

An advantageous embodiment of the invention consists in that the operating menu is transmitted as a WAP  
30 (wireless application protocol) page.

The term "wireless application protocol" (WAP) designates an increasingly used technology in telecommunications by means of which mobile radio stations  
35 preferably equipped, for example,

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- with a relatively large display, communicate with the Internet. An essential aspect of the invention consists in using this technology as a comfortable dialogue system between mobile radio station and intelligent node. The corresponding WAP page is built up by the intelligent node or an external logic (such as the "service manager point" (SMP) (SPC cluster) already mentioned).
- 10 A preferred embodiment of the method consists in that the operating menu is already transmitted during the signaling of the call to the called subscriber station.

In this case, the subscriber can use the call for 15 administering his supplementary services at a particularly early time - possibly without even having to accept the call.

20 In the text which follows, an exemplary embodiment of the invention will be explained in greater detail with reference to a drawing, in which:

Figure 1 diagrammatically shows the sequence of the method according to the invention and  
25 Figure 2 shows an example of an operating menu.

Figure 1 shows a situation in which a call R1 of a calling subscriber station AR passes, for example from a landline network, to a mobile switching center (MSC).  
30 Depending on the protocol used (e.g. ISUP), this can occur in the form of an "initial address message" (IAM) which contains the subscriber identification number of the calling subscriber station (ClgNo.: 0303861111) and of the called subscriber station (CldNo. +4917112345).  
35 Figure 1 shows data transmissions in dot-dashed arrows whereas voice transmissions are shown in

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continuous arrows. The mobile switching center MSC signals the incoming call in accordance with a standardized protocol INAP as so-called "initial detection point" (IDP) to an intelligent node SCP (service control point), informing it of the subscriber identification numbers involved. In this node, the voice link to the called subscriber station AG, which is a mobile telephone, is established in a ("traditional service") manner known per se. This link 5 is shown as INAP operation "Connect" CON between the intelligent node SCP and the mobile switching center MSC and specifies the called subscriber identification number CldNo. The intelligent node SCP can run supplementary services ZD during the connection set-up, 10 if available and activated by the subscriber. Such a supplementary service can be, for example, the "friends and family" or "blacklist" service described in detail initially. This presupposes that the subscriber 15 identification number (030386111) of the calling subscriber station AR is entered in the corresponding list of the supplementary service. If there is an entry 20 in the "blacklist", the call is not switched through to the called subscriber station AG or, respectively, at least the connection set-up is not completed.

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Taking into consideration the subscriber identification number of the calling subscriber station AR (i.e. if the respective supplementary service can be applied to the calling subscriber station), an operating menu BM 30 or a menu page is generated on the basis of the available supplementary services ZDV - that is to say the supplementary services which are provided or paid for the called subscriber station AG. Preferably, only the supplementary services which can be activated or 35 administered at all for the current subscriber identification number of the calling subscriber station

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will be received in the menu.

To transmit the operating menu pages, the WAP (wireless application protocol) technology is used. In this  
5 technology, the operating menu pages are described as WML (wireless markup language) (WAP generation). WAP designates a user-friendly communication technology which is known per se and which has been developed in particular for mobile radio telephones with Internet  
10 connection. In the telecommunication application, the WAP technology is also called WTA. The WAP page is transmitted via a WAP gateway WAPGW to the mobile switching center MSC and from there to the called subscriber station AG. This is preferably done already  
15 together with the paging message to the subscriber station AG. In fact, two traffic channels are established as already mentioned above - namely a channel between the subscribers (voice channel) and a data channel between subscriber station AG and node  
20 SCP. These traffic channels are correlated and co-ordinated by the node SCP and the management SMP, respectively.

Figure 2 shows the representation of the WAP page on  
25 the display DP of the called subscriber station AG. The called subscriber (Mr. Mustermann) is able to recognize the subscriber identification number (call: 0303861111) of the calling subscriber station in the display DP and add the number, for example to the "blacklist" (add No.  
30 to service) by means of a simple menu (bar up/down) and corresponding operation of the key T (select). It is also correspondingly possible to add the call number to the "white list" or to remove it from it again. This input for service administration

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is supplied by means of WAP technology to the node SCP which correspondingly updates the supplementary services ZD.

- 5 This provides the subscriber with a very elegant call-related administration option which can be exercised in a very simple manner and with few key operations by means of WAP/WTA technology. The content of the operating menu is advantageously presented visually to
- 10 the subscriber so that the elaborate voice dialogues and extensive inputs described in the introduction are eliminated. A corresponding implementation is possible if the call originates from a mobile subscriber station ("mobile originating call" (MOC)).